

## AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

### **LISTING OF CLAIMS**

1. (currently amended) ~~An obstacle detection stopping device of a~~ solar radiation shielding apparatus including an obstacle detection stopping device for stopping an extension of a solar radiation shielding member after an obstacle contacts said solar radiation shielding member, the apparatus comprising:

~~\_\_\_\_\_ which rotatably supports a~~ rotatable winding pulley;

~~\_\_\_\_\_ supports a solar radiation shielding member by a~~ lifting cord supported by said winding pulley;

~~\_\_\_\_\_ said solar radiation shielding member supported by said lifting cord;~~

~~\_\_\_\_\_ enables said solar radiation shielding member to be led in by rotation driving a~~ rotatable driving shaft selectively rotatably driving said winding pulley in a rolling-up direction of the lifting cord to retract said solar radiation shielding member, with a driving shaft rotated by an operating means; enables said solar radiation shielding member to perform lead-out operation by rotating said winding pulley being rotatable in an unwinding direction of the lifting cord by a tension exerted on said lifting cord to extend said solar radiation shielding member; and on the basis of operation of said operating means; and stops the lead-out operation by detecting an obstacle coming into contact with said solar radiation shielding member at the time of the lead-out operation of said solar radiation shielding member,

said obstacle detection stopping device ~~comprising~~ which includes:

\_\_\_\_\_ an obstacle detector frictionally engaging said winding pulley and adapted to stop~~detection means which blocks~~ rotation of said winding pulley that supports said lifting cord when after the tension exerted on said lifting cord is interrupted~~in a lead-out direction is not exerted to said lifting cord; and~~

\_\_\_\_\_ a stop operably engageable with said driving shaft and adapted to stop~~stopping means which blocks~~ rotation of said driving shaft in response to~~on the basis of rotation of said driving shaft~~ relative to said winding pulley in which rotation is stopped~~blocked on the basis of function of by~~ said obstacle detector~~detection means and said driving shaft.~~

2. (currently amended) The ~~obstacle detection stopping device of the solar radiation shielding apparatus~~ according to claim 1, wherein said obstacle detector~~detection means is configured by~~ further comprises a friction generator~~disposed generating means formed~~ between said winding pulley and a supporting member ~~which rotatably supports~~ said winding pulley.

3. (currently amended) The ~~obstacle detection stopping device of the solar radiation shielding apparatus~~ according to claim 1, wherein said stop~~stopping means~~ includes a cam mechanism coupled to said driving shaft, said cam mechanism moving said stop in which said stopping means becomes an engagement state or a disengagement state into and out of engagement with a supporting member ~~which rotatably supports~~ said winding pulley according to~~on the basis of rotation of~~ said driving shaft relative to said winding pulley ~~and said driving shaft.~~

4. (currently amended) The ~~obstacle detection stopping device of the solar radiation shielding apparatus according to claim 1,~~

wherein said stop further comprises ~~stopping means~~ includes:

\_\_\_\_\_ a first ~~member~~ stopping means ~~formed nonrotatably mounted along said driving shaft so as to be axially movable but nonrotatable relative to said winding pulley, and movably relative thereto along an axial direction and~~ said first member having a sliding hole that is inclined with respect to an axis line of said winding pulley;

\_\_\_\_\_ a second ~~member~~ stopping means ~~formed rotatably mounted along said driving shaft so as to be rotatable within a predetermined range and axially movable relative to said first member, said second member~~ stopping means ~~within a predetermined range and movably relative thereto in the axial direction by including a sliding projected part that is slideable inside said sliding hole but nonmovable relative to said winding pulley and sliding inside said sliding hole; and~~

\_\_\_\_\_ a third ~~member~~ stopping means ~~which engages with~~ mounted along said driving shaft and engageable with said first ~~member~~ to stop ~~stopping means and stops~~ rotation of said first ~~member~~ stopping means,

\_\_\_\_\_ wherein ~~in which~~ said first ~~member~~ stopping means moves ~~in the axial direction by the~~ axially along said driving shaft in response to rotation relative to said second ~~member~~ stopping means and stops the rotation by engaging ~~with~~ said third ~~member~~ stopping means; and

\_\_\_\_\_ said second ~~member~~ includes a controlling projected part that selectively engages ~~stopping means stops the rotation of said driving shaft by engagement~~

~~between a controlling projected part provided in said second stopping means the basis of the rotation stop of said first stopping means and an engaging projected part formed in~~ said winding pulley to stop rotation of said driving shaft and formed engageably with said controlling projected part.

5. (currently amended) The ~~obstacle detection stopping device of the obstacle detection stopping device apparatus~~ according to claim 4, wherein said first ~~member includes~~ stopping means is configured to arrange a plurality of braking claws evenly disposed along a circumferential direction of said first member, which engages the plurality of braking claws being selectively engageable with said third member ~~stopping means, formed at even angles along a circumferential direction.~~

6. (currently amended) The ~~obstacle detection stopping device of the solar radiation shielding apparatus~~ according to claim 1, wherein said ~~stop~~ stopping means is provided at only two locations along winding pulleys arranged on both sides of said driving shaft.

7. (currently amended) The ~~obstacle detection stopping device of the solar radiation shielding apparatus~~ according to claim 2,

wherein said stop further comprises ~~stopping means includes:~~

a first ~~member~~ stopping means formed nonrotatably mounted along said driving shaft so as to be axially movable but nonrotatable relative to said winding pulley, and movably relative thereto along an axial direction and said first member having a sliding

hole ~~that is~~ inclined with respect to ~~an axis line of~~ said winding pulley;

a second ~~member~~~~stopping means formed rotatably mounted along said driving shaft so as to be rotatable within a predetermined range and axially movable relative to said first member, said second member~~~~stopping means within a predetermined range and movably relative thereto in the axial direction by including a sliding projected part that is slideable inside said sliding hole but nonmovable relative to said winding pulley and sliding inside said sliding hole; and~~

a third ~~member~~~~stopping means which engages with~~ mounted along said driving shaft and engageable with said first ~~member to stop~~~~stopping means and stops~~ rotation of said first ~~member~~~~stopping means,~~

~~wherein~~in which said first ~~member~~~~stopping means moves in the axial direction by the axially along said driving shaft in response to~~ rotation relative to said second ~~member~~~~stopping means~~ and stops the rotation by engaging with ~~said third member~~~~stopping means; and~~

said second member includes a controlling projected part that selectively engages ~~stopping means stops the rotation of said driving shaft by engagement between a controlling projected part provided in said second stopping means the basis of the rotation stop of said first stopping means and an engaging projected part formed in~~ said winding pulley to stop rotation of said driving shaft~~and formed engageably with said controlling projected part.~~

8. (currently amended) The ~~obstacle detection stopping device of the solar radiation shielding apparatus according to claim 3,~~

wherein said ~~stop further comprises~~stopping means includes:

a first ~~member~~stopping means ~~formed nonrotatably mounted along said driving shaft so as to be axially movable but nonrotatable~~ relative to said winding pulley, and ~~movably relative thereto along an axial direction and~~ said first member having a sliding hole inclined with respect to ~~an axis line of~~ said winding pulley;

a second ~~member~~stopping means ~~formed rotatably mounted along said driving shaft so as to be rotatable within a predetermined range and axially movable~~ relative to said first ~~member~~, ~~said second member~~stopping means ~~within a predetermined range and movably relative thereto in the axial direction by~~ including a sliding projected part that is slideable inside said sliding hole but nonmovable relative to said winding pulley ~~and sliding inside said sliding hole~~; and

a third ~~member~~stopping means ~~which engages with~~ mounted along said driving shaft and engageable with said first ~~member to stop~~stopping means and stops rotation of said first ~~member~~stopping means,

~~wherein~~ in which said first ~~member~~stopping means ~~moves in the axial direction by the axially along said driving shaft in response to rotation~~ relative to said second ~~member~~stopping means and stops the rotation by engaging with ~~said third member~~stopping means; and

said second ~~member~~ includes a controlling projected part that selectively engages~~stopping means stops the rotation of said driving shaft by engagement between a controlling projected part provided in said second stopping means the basis of the rotation stop of said first stopping means and an engaging projected part formed in~~ said winding pulley to stop rotation of said driving shaft~~and formed engageably with said~~

controlling-projected part.

9. (currently amended) The ~~obstacle-detection-stopping-device-of-the~~ obstacle-detection-stopping-deviceapparatus according to claim 7, wherein said first member ~~includes~~stopping means is configured to arrange a plurality of braking claws evenly disposed along a circumferential direction of said first member, ~~which engages~~the plurality of braking claws being selectively engageable with said third member~~stopping means, formed at even angles along a circumferential direction.~~

10. (currently amended) The ~~obstacle-detection-stopping-device-of-the~~ obstacle-detection-stopping-deviceapparatus according to claim 8, wherein said first member ~~includes~~stopping means is configured to arrange a plurality of braking claws evenly disposed along a circumferential direction of said first member, ~~which engages~~the plurality of braking claws being selectively engageable with said third member~~stopping means, formed at even angles along a circumferential direction.~~

11. (currently amended) The ~~obstacle-detection-stopping-device-of-the-solar~~ radiation-shielding-apparatus according to claim 2, wherein said ~~stop~~stopping means is provided at only two locations along~~winding pulleys arranged on both sides of~~ said driving shaft.

12. (currently amended) The ~~obstacle-detection-stopping-device-of-the-solar~~ radiation-shielding-apparatus according to claim 3, wherein said ~~stop~~stopping means is

provided at only two ~~locations along winding pulleys arranged on both sides of~~ said driving shaft.

13. (new) A solar radiation shielding apparatus comprising:

a rotatable winding pulley;

a lifting cord supported by said winding pulley;

a solar radiation shielding member supported by said lifting cord;

a rotatable driving shaft selectively rotatably driving said winding pulley in a rolling-up direction of the lifting cord to retract said solar radiation shielding member, said winding pulley being selectively rotatable in an unwinding direction of the lifting cord by exerting tension on said lifting cord to extend said solar radiation shielding member; and

an obstacle detection stopping device for stopping the extension of said solar radiation shielding member after an obstacle contacts said solar radiation shielding member, said obstacle detection stopping device including:

a friction generator disposed between said winding pulley and a supporting member rotatably supporting said winding pulley, said friction generator frictionally engaging said winding pulley and adapted to stop rotation of said winding pulley after the tension exerted on said lifting cord is interrupted;

a cam clutch circumferentially mounted along said driving shaft, said cam clutch:

being axially movable relative to said winding pulley;

being nonrotatable relative to said winding pulley; and



including a helical slot;  
a rotary drum circumferentially mounted along said driving shaft, said rotary drum:  
being integrally rotatable with said driving shaft;  
being partially rotatable relative to said cam clutch;  
being axially movable relative to said cam clutch; and  
including a projection nested within said helical slot; and  
a support mounted along said driving shaft and selectively engageable with said cam clutch to stop rotation of said cam clutch,  
wherein said cam clutch moves axially along said driving shaft in response to rotation relative to said rotary drum and stops the rotation by engaging said support;  
and  
said rotary drum includes a controlling projection that selectively engages an engaging projection of said winding pulley to stop rotation of said driving shaft in response to rotation of said driving shaft relative to said winding pulley after rotation of said winding pulley is stopped by said friction generator.

14. (new) The apparatus according to claim 13, wherein said cam clutch includes a plurality of braking claws evenly disposed along a circumference of said cam clutch, the plurality of braking claws selectively engaging said support.